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need none of these charities, but that they cry for fair wages and reasonable rents, and they will furnish their own chapels, their own libraries and reading-rooms.]

BOOK-REVIEWS.

Three Cruises of the United States Coast and Geodetic Steamer "Blake" in the Gulf of Mexico, in the Caribbean Sea, and along the Atlantic Coast of the United States, from 1877 to 1880. By ALEXANDER AGASSIZ. 2 vols. Boston and New York, Houghton, Mifflin, & Co. 8°. \$8.

FEW general readers are aware, or at least appreciate, the very great advances that have been made during the last two decades in our knowledge of the deep sea and its life. With the researches of the lamented Pourtales, and the famous voyage of the 'Challenger,' a new epoch was entered upon in the science of thalassography, as our author aptly calls it, that has brought a vast amount of light upon many vexed problems in biology as well as geology; and in the results already attained America justly lays claim to a large share of the credit. The deep-sea soundings and dredgings carried on with the 'Hassler' and 'Blake' of the United States Coast Survey, and more recently with the 'Fish-Hawk' and 'Albatross' of the Fish Commission, have been of the greatest importance.

A score of years ago, with the old line and sinker, depths of eight thousand fathoms were reported with "no bottom:" now the improved machinery and steel-wire lines have brought up mud from the bottom at over four thousand fathoms, and accurate soundings have reached 4,655 fathoms. The 'Blake' made dredgings at the very great depth of 2,400 fathoms in an hour or two's time: by the older methods twenty-four hours were consumed in dredging from half that depth. With the electrical thermometer, accurate readings of the temperature of the water at any depth the sounding-line can reach may be read from the ship's deck, and specimens of water from near the bottom may be brought to the surface, uncontaminated, for analysis. With all these improved appliances, it is not too much to expect that not many years hence accurate contour-maps will be made of all the more important deep-water bottoms, and a vast deal added to the knowledge of the physical conditions and life of the deepest oceans. What light such knowledge may throw upon the physical conditions of our globe and its geological history one cannot foresee, though surmise.

So, too, the deep-sea life, and the conditions under which it exists, are of interest in themselves, as well as for the relations they bear to others. That the normal conditions of life may exist under a pressure of two or three tons to the square inch, may seem remarkable; but it is more remarkable that the same species may adapt itself to the extremes of pressure, or that the same individual may exist indifferently under differences very many times greater than can the terrestrial animal. "Fishes and mollusks are apparently the only animals which show very markedly the effect of diminished pressure. In fishes brought up from deep water, the swimming bladder often protrudes from the mouth, the eyes are forced out of their sockets, the scales have fallen off, and they present a most disreputable appearance." It is not believed that light can penetrate over four hundred fathoms; nevertheless, Professor Agassiz states that "by far the majority of the animals living at a depth of about 2,000 fathoms have eyes either like their allies in shallow water, or else rudimentary, or sometimes very large." What an animal can need of eyes for perpetual life in intensest darkness is hard to say; but perhaps the presence of eyes, and ornamental coloration, in these deep-sea creatures, may mean that rays of light, perhaps the non-actinic ones, may reach even two or three thousand fathoms.

But space will not permit us to touch upon the many interesting topics of this work. Suffice it to say that the two beautifully printed volumes treat very fully of the general methods of thalassographic work, and the physical conditions and faunæ of the deep Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. The work has over five hundred and fifty excellent engravings, the larger part illustrative of characteristic deep-sea types of life. As a sound and permanent contribution to the literature of the deep sea and its inhabitants, the author is justly entitled to great credit.

Entomology for Beginners, for the Use of Young Folks, Fruit-Growers, Farmers, and Gardeners. By A. S. PACKARD. New York, Holt. 12°. \$1.40.

IT has been said that a good entomological text-book is one of the most difficult tasks that an author can undertake; and when we consider that there are a million kinds, more or less, of greater and lesser bugs (as the laity will persist in calling insects) in existence, and a great, if not corresponding, variety in their structure and habits, it is not to be wondered at that general entomologists are very few. A high authority upon beetles or butterflies may be, and generally is, very ignorant upon the subjects of bees and bugs, and *vice versa*. The trouble is, the entomologist is yet too busy cataloguing new discoveries, and, as a million more names will be needed before *finis* is reached, he feels no concern except for his own immediate part of the task.

Books, good, bad, and indifferent, there have been in plenty upon insects. The descriptive literature of the two hundred thousand kinds already made known alone must equal that of all the rest of the animal kingdom. But of books that may be classed as serviceable text-books on general entomology, there are very few indeed. Westwood's classical 'Introduction,' Harris's 'Injurious Insects,' and Packard's 'Guide,' have been about the only ones in the English language till lately. It is therefore with the more pleasure that we welcome the present work from the pen of a well-known author and entomologist. We are disposed to find fault with its title, for it really is a better guide to the study of insects than the author's larger work. If there is any thing else, except trivial details, that we would criticise, it is that the author has attempted to compress too much into so small a volume, and that some parts are not as thoroughly arranged and digested as they should be. Its merits are, that it gives in simple language the information and instruction needed by the student who has a fancy or passion for collecting insects, as regards their habits, structure, classification, collection, preservation, and study; and for this purpose we believe it to be the best in the language. To the farmer and horticulturist it will be of less, though considerable, value.

An Elementary Course in Descriptive Geometry. By SOLOMON WOOLF. New York, Wiley. 8°. \$3.

THE present text-book is a good introduction to the study of descriptive geometry, its principles and methods being set forth concisely and clearly. After a brief discussion of the principles of projection, the point, the line, and planes and surfaces, are fully discussed. The author has selected the problems so as to elucidate the properties of all geometric combinations, and thus to give the student as well a clear understanding of the methods of descriptive geometry as the greatest possible practice in the use of these methods. Their practical use is always kept foremost before the mind of the student. Thus the use of supplementary planes and projections is introduced by emphasizing the necessity of using special constructions for making clear the character of the object to be represented, and for lessening the constructive difficulties of the case. The methods of rotation and rabattement used for this purpose are fully discussed. The whole field of descriptive geometry is thus treated, the problems being illustrated by numerous clear cuts. The properties of the projections of angles and sections, intersections and tangents, are fully discussed, while the book closes with a chapter on development of surfaces. The conciseness and clearness of the treatment, and the practical arrangement of the material, make the book of great value to the teacher and to the student.

NOTES AND NEWS.

THERE was no address this year by the vice-president of Section D of the American Association.

— The officers of the American Association for next year are as follows: — President: T. C. Mendenhall of Terre Haute, Ind. Vice-presidents: Mathematics and Astronomy, R. S. Woodward of Washington, D.C.; Physics, H. S. Carhart of Ann Arbor, Mich.; Chemistry, William L. Dudley of Nashville, Tenn.; Mechanical Science and Engineering, Arthur Beardsley of Swarthmore, Penn.; Geology and Geography, Charles A. White of Washington; Biology, George L. Goodale of Cambridge, Mass.; Anthropology, Garrick Mallory of Washington; Economic Science and Statistics,